2006 Remand Trial Transcripts Part 1

IN THE UNITED STATES DISTRICT COURT

IN AND FOR THE DISTRICT OF DELAWARE

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HONEYWELL INTERNATIONAL INC. and HONEYWELL INTELLECTUAL PROPERTIES INC., : Civil Action

Plaintiffs, :

v. :

HAMILTON SUNDSTRAND CORPORATION, :

Defendant. : No. 03-1153-GMS

- - -

Wilmington, Delaware
Thursday March 23, 2005
9:00 a.m.

- - -

BEFORE: HONORABLE GREGORY M. SLEET, U.S.D.C.J., and a Jury

APPEARANCES:

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THE COURT: Good morning. Please be seated.

(Counsel respond "Good morning.")

THE COURT: We will start out with a round of reintroductions, beginning with Mr. Krupka and his team.

MR. KRUPKA: Good morning, Your Honor. Nice to see you again. Bob Krupka, Jonathan Putnam, Lee Ann Stevenson, and Tom Grimm for Honeywell.

Also at counsel table, this is David Schlaifer, who is our technical assistant. He will be sitting at counsel table for convenience, if it is okay with the Court.

THE COURT: That is fine, absolutely. Mr. Kirk, or whoever.

MR. LEVINE: Your Honor, Mark Levine for Hamilton Sundstrand. With me from my firm are Chris, and Brian Swanson, an also here is David Herrington.

THE COURT: We can get back.

What did we decide at the pretrial conference with regard to openings?

MR. KRUPKA: Your Honor, we decided that the parties could make openings and indeed I thought it would be helpful to the Court and it would simply count against our time, which we have agreed would be split between the parties.

THE COURT: You have the floor, Mr. Krupka.

MR. KRUPKA: Yes, Your Honor. If I might briefly bring up a few housekeeping matters that will be very quick.

In view of Your Honor's ruling yesterday, we will not be calling Mr. Garner, obviously. Mr. Goolkasian, obviously, will not be called, either. I have discussed this with opposing counsel. We don't have any strong feelings about it. We would like the record to reflect that as an offer of proof, the subject matter of Mr. Garner's testimony would be as described in his expert report, which was attached to our opposition to Sundstrand's motion in limine, limited to, obviously, the subject matter of the other reasons.

THE COURT: I think it is important, yes.

MR. KRUPKA: If the Court would like to do something more formal than what I have just done, I am happy to. But I was reluctant to voluntarily put more paper before the Court unless the Court thought it would be necessary.

THE COURT: Mr. Lind, Mr. Levine?

MR. LIND: I think that is fine. It is clear they gave up on tangential relation, and just as to the other reasons, the papers and the parties have already been filed. We agree.

THE COURT: The Court agrees, it is sufficient.

MR. KRUPKA: Thank you, Your Honor.

With respect to exhibits and deposition designations, the parties are still feverishly working out final details on that. We will sort those all out. We are trying to keep issues that the Court needs to decide to a minimum.

The parties are still working on that. The only other thing, Your Honor, I have advised Sundstrand's counsel we would invoke the sequestration rule with respect to their fact witnesses and there is no objection to that.

THE COURT: So ordered.

MR. LIND: The only issue on the deposition designations is that we will be giving Your Honor DVDs that will fit the video, so you can see the actual testimony.

Federal Circuit did not change the file history, and did not change the language of the claims. There was no rearranging of the language. There was no reinterpretation of what the claims meant. It simply, like all of us, when we do this in court, used a shorthand term to identify what we knew we were talking about as opposed to every time we say something, speak the exact complete, full words of all three claims.

Now, the specific text of the claims, that constitute the so-called inlet guide vane limitations, is what is set forth here in red. I recognize it is difficult to do so on the screen, but we are all familiar with the claims and all familiar with the terms of the claims.

My point here was simply to demonstrate that the term inlet guide vane limitation does not become the limitation. It is the reference to this language in each of the three independent claims that's at issue, namely, the language that appears in red, all of which was added by the amendment that rewrote the dependent claims in independent form.

If we go to the next slide, which is Slide 6, this is how it occurred. The independent Claim 16 was rejected. Dependent Claim 17 was objected to. It was rewritten in independent form and became Claim 8 of the '893 patent.

Similarly, Claim 19 found its origin in independent Claim 32 that was rejected, dependent Claim 35, that was objected to, and it became allowed Claim 19 in independent form.

Similarly, with respect to the '194 patent, it actually was two patent preliminaries that were rejected, independent 48 and dependent 49, to which the Patent Office rejected them on prior art grounds. Dependent Claim 51, which depended from 49 and therefore 48, was rewritten in independent form and became Claim 4.

And I think Your Honor is aware that there were some minor changes on Rule 112 grounds. And I think both parties have agreed and set forth in their trial briefs that we all agree, those are irrelevant for purposes of this trial.

So, the result of this rewriting, Your Honor, was that Claim 8 added four limitations, including the inlet guide vane limitation.

Not only the inlet guide vane limitation. So it was the inlet guide vane limitation and three others.

Similarly, Claim 19 had four limitations added, only one of which was the inlet guide vane limitation. And Claim 4 had two limitations added, one of which was the inlet guide vane limitation.

Now, if we look at Claim 8, and Your Honor has a

better copy to look at in your book, to be sure, Claim 8 added from the dependent claim the reference to adjustable inlet guide vanes. But it also added a limitation that talked about how the flow-related parameter would be substantially independent of temperature. That is a separate limitation that is not part of the so-called inlet guide vane limitation.

Third, in Element (e), there was added an adjustable control set point. Again, separate from the inlet guide vane limitation.

Finally, Your Honor, means for transmitting to the comparator means a reset signal in Item (f).

The reason I bring this up, Your Honor, is because we have two things going on here simultaneously.

The Court is asked to make a decision with respect to file wrapper history, as to whether the reason for the amendment was merely tangential to the equivalent found by the jury. So we have two issues there. One is the reason for the amendment. And the other is the equivalent and whether it's tangential to the equivalent.

Sundstrand would have the Court believe that the only thing -- indeed, their trial brief remarkably says, the only limitation that was added, the only limitation that was added when the independent claims were rewritten -- excuse me, the dependent claims were rewritten into independent

form, it was the inlet guide vane limitation. That is demonstrably not correct.

There were limitations added when the dependent claim was rewritten into independent form beyond the inlet guide vane limitations. So what Sundstrand says in their trial brief, that there was only one limitation added and it was only the inlet guide vane limitation, is demonstrably incorrect.

This is important for purposes of analyzing the objective record of the file wrapper history with respect to whether or not the equivalent was tangential to the reason the amendment was made during the prosecution of these two patents.

Similarly, Your Honor, with respect to Claim 19, there were four different limitations added by the amendment, which rewrote the dependent claim into independent form. Yes, one of them was adding adjustable inlet guide vanes. That is this first one up here. Another one was the sensing of a predetermined parameter in Element (b).

A third was to include an outlet in Element (e). And finally, the last and fourth was a guide vane position sensor added in Element (g).

So again, there were limitations added by the amendment during the prosecution which the Federal Circuit

one would ask if this case had been brought ten years earlier would the outcome have been the same. Well, everything was done the same, if it was, it probably would have been. Does that make the outcome foreseeable? I don't think so.

The fact that you develop something when you turn your attention to, if you had done it somewhat earlier, and you go through all the steps to come up with a new way of doing it, does that make the new way of doing things foreseeable? No. It simply means that you would have been as creative back then as you were later. I am not sure it really applies to the APS 3200, because as Your Honor will recall from the evidence, the only way Sundstrand got over the hump and figured out how to do it, and came out with a device that was competitive with Honeywell, was by going to Honeywell's partner, Turbomeca, and getting access to Honeywell's data, and then -- data from in part the 331 through 350, and then coming up with the solution they did in 1995.

I don't believe that that testimony means anything as foreseeable.

Next, Your Honor, what they do is they go through -- and this, Your Honor, there Your Honor is well familiar with this in cases where people argue obviousness.

They take what they say the equivalent is and

they go back into history and say, well, gee, this piece is over here, and this other piece is over there, and I find some other pieces down over here. We will just now, now knowing what this combination is, that came up, Sundstrand came up with in 1995, we will go back and see if we can find the different parts someplace and put them together.

That is not foreseeability. That is unforeseeability.

You can't use hindsight to go back and try to pick all the different pieces and say, well, it would have been obvious to put all this stuff together then. We know, Your Honor, that these patents, these claims, are not obvious. They tried to prove they were obvious and the jury said no, the Court said no, and the Federal Circuit said no.

So now what they are trying to do is the same thing and go back using hindsight and say, let me start from the end and work backwards and see if I can figure out the different pieces, and then I will pretend that if I had known about all those pieces then, I would have been able to put them together in the same combination later.

It doesn't work. If anything, Your Honor, the fact that they needed to do that shows that, in fact, the combination is unforeseeable.

So, where are we with respect to unforeseeability?

Our position, Your Honor, is the evidence shows that the equivalent, which is the blue-purple text, was unforeseeable at the time of the amendments in 1982 and '83 because nobody had ever done it before, and it took Sundstrand another ten to 15 years to do it.

So, our position, Your Honor, then, closing up, is that there are two reasons why we have rebutted the presumption. The rationale underlying the narrowing amendment bore no more than a tangential relation to the equivalent. And we will talk more about that in our posttrial briefings and the closing. And that the equivalent that is at issue here would have been unforeseeable at the time the of the narrowing amendment.

Therefore, we contend, Your Honor, that we have overcome -- if you can flip to the last slide -- that is the question that we were asked. The answer is, Your Honor, we have overcome the presumption and the jury's verdict of willful infringement should be reinstated.

THE COURT: Thank you, Mr. Krupka.

MR. KRUPKA: Thank you.

THE COURT: For planning purposes, we will take lunch about 12:30. We will take breaks in the interim as needed. If counsel need a facilities break at any point you should just let me know. If you need one now.

MR. LIND: We are going to set up a board and

stuff.

THE COURT: Let's take a short break then.

(Recess taken.)

THE COURT: Please be seated, counsel. Mr. Lind.

MR. KRUPKA: Your Honor, Mr. Lind has indulged me one correction.

Your Honor, you will recall I went through and explained there are other limitations to the claim, not just the guide vane. That is correct. When I was playing with my laser on the depictions of the actual claim language, apparently I picked out some wrong things. I just want to refer Your Honor to Page 8 of our trial brief, which sets forth the four limitations in each of the '893 patent claims that were added and the two that we claim were added to Claim 4 of the '194.

So it is on Page 8 of Honeywell's trial brief, not reply trial brief.

THE COURT: I was looking at the wrong one.

MR. KRUPKA: They are all set forth there. If I misspoke, and I am told I did, fortunately, Mr. Putnam and Ms. Stevenson are here to correct me when I make those exuberant mistakes with the laser, they are set forth there, Your Honor, just so there is no misunderstanding.

THE COURT: Okay.

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and the original independent claims were canceled, effectively adding the inlet guide vane limitation to the claimed invention.

That is how the Federal Circuit describes the amendments that are at issue in this case. And because of that, Honeywell's rewriting the dependent claims into the independent form, along with canceling the original independent claims, constitutes a narrowing amendment, a narrowing amendment because of adding in the guide vane limitation. And therefore in this case, as the Federal Circuit held, there is the presumptive surrender of all equivalents to the inlet guide vane limitation and Honeywell is presumptively estopped from recapturing those equivalents to the inlet guide vane limitation.

These are issues that have been cited and these are issues that Honeywell cannot reargue now.

The first thing they did in their opening statements this morning is point to Your Honor's summary judgment opinion from 2001 two years before the Festo case came out, and pointed to things that they called factual findings in a judgment, or opinion denying summary judgment.

A couple of things about that.

I don't think that that has any bearing on the issues that are now before the Court on remand, for a couple of different reasons.

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The first reason is, the Court's statements about Honeywell not giving up the inlet guide vane limitation or not surrendering the inlet guide vane limitation are not findings of fact. Those were legal determinations based on the motion for summary judgment.

Second of all, accepting those statements, which we don't agree bear on this, but accepting those statements as they were, what the Court's statements were is that Honeywell did not give up the inlet guide vane limitation. That's what was on Mr. Krupka's slide as a direct quote from the Court's opinion.

That is not what is at issue here. What is at issue here is whether Honeywell gave up all equivalents to the inlet guide vane limitation. What is at issue here is whether Honeywell gave up the entire scope, in the words of the Supreme Court, the entire scope between the dependent claim that was allowed once it was rewritten and the original independent claim.

What the Federal Circuit held in this case is that Honeywell gave up that entire scope. They didn't give up the actual inlet guide vane limitation. They still have their inlet guide vane limitation.

In fact, the reason we are here is because they are limited to that inlet guide vane limitation without its equivalents and without anything between that in the guide

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vane limitation and the original broader claim that was rejected as obvious.

Now, even if, however, Honeywell interprets the Court's summary judgment opinion from 2001 to suggest t Honeywell didn't give up any equivalents to the inlet guide vane limitation, the Federal Circuit addressed that issue and based on the narrowing amendments that Honeywell made adding the inlet guide lane limitation, the Federal Circuit determined that there is a presumptive surrender of all equivalents to the inlet guide vane limitation and that Honeywell is presumptively estopped from recapturing those equivalents.

The starting point as to the Court's 2001 summary judgment opinion does not direct the analysis that we are here for today.

A couple other things that the Federal Circuit decided that bear on some of Honeywell's arguments. The first is that the Festo presumption of surrender applies retroactively.

So just because Honeywell's attorneys, lawyers, the patentee itself, thought something was different back in 1982, and this may not be an issue anymore in light of the other reasons ruling, does not mean that Festo estoppel does not apply. It is a retroactive application.

Secondly, Honeywell conceded that the inlet

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guide vane limitation is not literally met by the accused APS 3200 and they can't relitigate that issue as they try to do again under the other reasons.

Honeywell's equivalence argument, as recognized by the Federal Circuit, was that the 3200 met the inlet guide vane limitation under the doctrine of equivalents because the APS 3200 uses inlet guide vane position to efficiently control surge.

That is what the Federal Circuit recognized as the equivalent in the case.

As Your Honor recognized in the JMOL opinion, the Honeywell equivalence theory was that the flow-related parameter used by the APS 3200 was a direct function of the inlet guide vane position, and therefore was equivalent.

That, too, bears directly on the unforeseeability issue that Mr. Levine is going to address. Each of these determinations that the Federal Circuit made affect Honeywell's arguments in this case and they can't be relitigated.

I am going to move on with the slides. I have put the majority of these up on the board and I might refer back to them.

The next important point to look at in the big picture here is, there were certain choices that Honeywell made, both during prosecution and during the litigation in

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this case that determined the outcome of many of the issues.

As Your Honor recognized, and as the case law has recognized, the test is not whether Honeywell thought it made a decision or made a choice not to have drafted a broader claim at the time. But the test is whether Honeywell could have. And Honeywell's choices are important in looking at the overall Festo analysis.

The first choice they made was that they chose to accept the narrowing amendment that was offered by the examiner, as is, without any modification, without any argument, without any traversing, which is the patent word for trying to get around it, without any appeals, and, importantly, without drafting any new claims of intermediate scope.

You had a claim here that was narrow. You had a claim here that was broad. And they took the narrow claim on the first offer, without trying to get anything in between. We are going to see how the Federal Circuit treats that decision by a patentee.

They also chose not to explain any reason for their amendments.

They have some post-hac rationales and reasoning now as to what they were really trying to do and why the prior art really didn't affect the amendments that they made and why they made amendments for different reasons. That is

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not in the prosecution history. And they chose not to explain any reason for the amendments, other than we are using the IGV limitation to overcome the prior art or the examiner's prior art rejection.

The last choice they made was the choice that they made during litigation, and that was the choice to assert a broad characterization of the equivalent in order to get an infringement verdict. And they are stuck with the characterization of what the equivalent or what falls under the equivalence of their IGV limitation that they pursued at trial in order to get the verdict that they did.

They can't relitigate those issues. The choices that Honeywell made on each of these points, along with the prosecution history evidence and the Federal Circuit's case law, show that Honeywell can't meet their burden under any of the three Festo prongs.

Let's talk about tangential relation specifically now.

Honeywell can't show its amendments were tangentially related, as the case law says, to the equivalent.

The prosecution history merely shows that the reason for Honeywell's amendment was directly related to the equivalent. The reason for Honeywell's amendments was to use inlet guide vane limitation and the use of inlet guide

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vane position to overcome the prior art rejection, which was directly related to the equivalent, which was Sundstrand's use of inlet guide vane position.

And it's important to, when you are looking at the equivalent for purposes of tangentially related, the test is not was reason for the amendment exactly the same as the details of the equivalent. On tangentialness, especially, it is, is there a relationship there? Do they both involve the same type of thing? Not the exact detailed subject matter.

There is no question here that the reason for Honeywell's amendment, to add that IGV limitation and the specific use of IGV position to overcome the examiner's prior art rejection, was directly related to the alleged equivalent.

What Honeywell can't do is rely on its own silence and failure to explain any reason for having added the inlet guide vane limitation, which is what they say now. They just say, well, we took the examiner's deal, without explanation, they didn't say anything about it. They can't rely on that silence. They can't rely on that explanation for any reason in order to overcome the Festo presumption.

The third point on tangentiality is that they can't show tangentiality. Mr. Krupka said that we misinterpreted their opening brief and Your Honor has seen

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the brief and can interpret it himself. But they seem to make a pretty aggressive argument that, let's go back to the old rule, where you had, in order to get estoppel, you had to have the equivalent exactly in the prior art before the examiner, and you only get around the presumption if you match the prior art that was before the examiner.

That's not the rule anymore. The Federal Circuit cases now say you cannot show tangentiality under Festo merely by establishing that the equivalent was not disclosed in that prior art cited by the examiner.

Now, why was the reason for the amendment directly related or how was it directly related?

What Honeywell did based on the examiner's rejection is they -- and this is not disputed. They effectively, as the Federal Circuit put it, inserted the dependent claim language, the extra limitation, the IGV limitation, into the independent claims that had been rejected in order to get around the prior art rejection by the examiner. And that's what Honeywell relied on in order to gain allowance of the claims.

That is what the reason was, the rationale, the purpose, behind Honeywell's amendment, was to use that IGV limitation in order to get around the claims and distinguish the prior art.

By doing so, what Honeywell did is voluntarily

surrender the entire scope of equivalence between the IGV limitation that they added and the broader rejected claim. And that reason for the amendment, the addition, the use of the IGV position in order to get around that prior art rejection, is directly related to the equivalent and the purpose -- the equivalence argument that they made at trial, which is that's Sundstrand's use of the IGV position in its surge control system. Those two uses of IGV position are obviously related because they argue that they are equivalent.

Festo, it is important, had similar facts. Festo to itself.

What happened in Festo is the patentee, Festo, added what was called a sealing ring limitation in the case, at least in part, which is an important part of Festo. I don't think we need to rely on it, but it is important Festo noticed the amendment made at least in part to distinguish the prior art or the reason for the amendment. The sealing ring limitation was added at least in part to distinguish prior art that did not have the sealing limitation.

And the Court found that that relationship was not merely tangential, because the sealing ring is what was at issue in the equivalence argument that the patentee made on the original case.

As in Festo, the reason for the amendment,

adding the IGV limitation to get around the prior art that did not contain it, is directly related and certainly not tangential to the equivalent at issue in this case relating again to the use of IGV position.

And Honeywell did not in the prosecution history and still cannot today give any other reason for the amendment that would be tangentially related.

What the cases say is that it's Honeywell's burden to affirmatively point to evidence in the prosecution history that shows a lack of relationship or a merely tangential relationship between the reason for the amendment and the equivalent.

And on this prosecution history especially, Honeywell cannot show that.

What I have done here in the next slide is -- these are Exhibit 31, which is the prosecution history to the '893 patent, and Exhibit 33 on the bottom, which is the prosecution history for the '194 patent. This is the sum and substance, these two clips, of everything that Honeywell said in the prosecution about their amendment. All they said was, these claims at issue in this remand have been rewritten in independent form. That is all they said. That's all they explained. That's all they did. They didn't explain any other reason for their amendment.

And this is the sum and substance of what they

said about why they were amending the claims. That's why there is no reason expressed here, no tangential reason at all, for these amendments. They can't rely, the case law says you can't rely on the failure to give a reason in orde to overcome the presumption and show that the reason w merely tangential. Such unexplained amendments cannot overcome the presumption.

Now, I want to go to a couple of cases, because Mr. Krupka didn't refer to any of the case law, actually, when we looked at this issue. But Festo itself and then Biagro, which are two of the important Federal Circuit decisions on this issue, Festo said, where the prosecution history reveals no reason for the amendment, and where the patentee still identifies no reason, the patentee has not shown that the rationale for the amendment was only tangential to the accused equivalent.

Similarly, in Biagro, the Court said, since the prosecution history shows no reason for amending the claim to add an upper limit to the concentration range, which was the claim limitation in Festo, Biagro cannot claim that the rationale for the amendment is merely tangential.

That is exactly what Honeywell did here. They didn't give any reason. What they just said is, we are converting the claims from dependent form to independent form. And that's not any reason that's tangential to using

the inlet guide vane limitation in order to get around prior art and gain that acceptance.

Now, the argument that they make is that, well, we didn't have to explain ourselves, because there was no inlet guide vane prior art. And therefore, there was nothing specifically for us to go in and explain why our use of inlet guide vanes was different from some other use of inlet guide vanes.

What Honeywell says is, since the amendment, the addition of inlet guide vanes, was -- or the particular use of inlet guide vanes was unnecessary to get around that prior art, as Mr. Krupka said, they say the prior art involved only the proportion controllers. They say therefore it was unnecessary. We didn't have to explain ourselves because the amendment itself was unnecessary.

That is an argument that has been rejected both by the Federal Circuit and Festo, especially in Biagro, where the patentees made the same point.

In Festo too, regarding the magnetizable limitation, there were two limitations at issue. The sealing ring, then the magnetizable characterization of the material, the metal. What Festo said, is that, look, there was no art addressing this magnetizable feature. And therefore, we didn't have to even make this amendment. It was an unnecessary amendment. And therefore, it must be

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tangential.

The Federal Circuit said, no, the fact that that amendment was unnecessary to get around the prior art does not make it tangential where you didn't give any alternative explanation other than adding it to distinguish from the prior art and get the claims allowed.

In Biagro the same point was made on the unnecessary argument. That is exactly what is the case here. Unless you go in and explain yourself, I am making this amendment for some reason different than getting around the prior art and getting these claims allowed, because I don't need to get around the prior art with this amendment because there is nothing about in the guide vane use or nothing about magnetizable in Festo, unless you do that, you can't carry your burden of overcoming the tangential relation, under the tangential relation prong.

I want to point out the Biagro case briefly. It is interesting what they said.

In Biagro they talk about Festo. They said, viewed from that perspective, the situation is analogous to the amendment in Festo that added the magnetizable limitation. The prosecution history revealed no reason for the amendment, and therefore Festo could not show that the rationale underlying the amendment was only tangential to the accused non-magnetizable equivalent. That is our case.

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Similarly, in this case -- Biagro -- since the prosecution shows no reason for adding an upper limit to the concentration, Biagro cannot claim that the rationale was merely tangential.

Honeywell makes the same argument that Festo and that Biagro rejected.

Another important case, especially because it's, I think, instructive, is the most recent, I guess until yesterday, the most recent District Court case addressing the Festo matter, was the Windbrella case, out of the Southern District of New York, decided last month.

Again, the Windbrella case -- it is a very interesting case because the facts are identical to this. What happened in Windbrella was the same thing. There was an independent claim and a dependent claim. The examiner said, if you rewrite -- we are going to reject your independent claim. But if you rewrite your dependent claim in independent form, we will allow it. And the patentee said, deal. And that was it.

Just like what happened here, with no explanation of any other reason for doing it. They took the deal. And what the Court says, in Windbrella, is there is no tangential relationship where there was no explanation of this amendment in the record that would make that limitation issue.

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That is the case here. There is no explanation in this record that says that IGV that you required in your limitation is irrelevant to us in getting this patent. In fact, the contrary, Honeywell, it is clear from the record, they used the IGV limitation to get the patent.

Similarly, in the E-Speed case from this district, the amendment was tangential again, where there was no reason given for canceling of the original application claim and subsequent addition of the new claim.

This makes sense, this rule makes sense. The rule makes sense because the burden is on Honeywell, the burden is not on us to try to explain what they did, because we weren't there. The burden is on Honeywell to explain why, or where in the prosecution area it shows that what they did was for a tangential, different reason than what their whole equivalence argument was at trial.

And the silence in that prosecution history is not enough. This also makes sense because of the public notice function of the prosecution history itself.

These are some discussions from the Windbrella case which actually goes through this in pretty good detail.

The rule that I just described makes sense because the purpose of the prosecution history is to provide the public with notice. It goes on, it is the public record. The public notice function of the prosecution

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history would not be well-served by the acceptance of unsupported post-hac interpretations used to reduce the impact of narrowing amendments and the doctrine of prosecution history estoppel.

And that is what is at issue in this case, where there is no alternative explanation for the reason of those claims, you can't claim tangentiality, because what you would do by that is you would encourage, as Honeywell says here, patentees to keep their mouth shut.

Basically, their argument is, the less you say in the prosecution, the better off you are. That completely undermines the public notice function of the prosecution history.

There shouldn't be the incentive, and the cases recognize there shouldn't be the incentive to have unexplained amendments or to simply say, we will take the deal in order to avoid the prosecution history estoppel.

Because of this public notice function, the burden here is important. And the public notice function, not only the case law puts the burden on Honeywell to overcome the presumption, but the public notice function behind the prosecution history itself puts the burden on Honeywell because they are the ones who were there and had the opportunity to explain what they were doing.

Honeywell tries to kind of flip the burden and

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put the dependent claim into the independent claim. What Mr. Krupka showed you, and I am going to walk through it, is not what Honeywell prepared at the time to the Patent Office. It is what the graphics people put together for them for litigation. You are going to see some stark differences.

What is clear from looking at this, the actual evidence, and this is kind of, the formality of the way that they merged these claims makes this a little counterintuitive on the red-lining aspect because they merge actually the independent claim into the dependent, but nobody thinks that makes any difference.

So what this shows is the red-lining that Honeywell submitted to the Patent Office to show the merger of the dependent claim into the independent claim. So what is underlined was the original independent claim. What is not underlined is what comes in from the dependent claim.

What you can see by this, and I will do it kind of in reverse order of Mr. Krupka and we will go right to left, because it's easier to look at -- is in Claim 4, it is clear as day from Honeywell's own document that they gave to the Patent Office that the only thing that they added was the inlet guide vane limitation, which is Element (d). And there is no separation between -- they put the word adjustable inlet guide vanes in the preamble up at the top,

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which is, you have to do it, it is a patent rule called antecedent basis. You can't talk about the use of inlet guide vane positions at the bottom, which are added unless you say this thing has got inlet guide vanes.

So that is not a separate limitation. It is part of the inlet guide vane limitation and I think in the first slide, Slide No. 5, he treated it as such. When he came back with this errant laser pointer, he pointed to this as a separate limitation. It's not. It is part of the inlet guide lane limitation. It is the only additional limitation they make or the only limitation they added in their amendment.

Claim 19 of the '893, same thing. The only change to the claim by them in the dependent and the independent claim if you look at the red-lining is the inlet guide vane limitation, Limitation (g). And again a reference in the preamble, which is related to it, to the adjustable inlet guide vanes.

It is clear from this that, from 4 and 19, there can't be any argument that the only thing added was inlet guide vanes. When you look at inlet 8, we have the same inlet guide lane limitation also. In the preamble, we have the inlet guide vane, which is the structure, you need the function. The Federal Circuit says they are one and the same, inlet guide vane limitation then Element (f), which is

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the use of the inlet guide vane limitation, the only common element between these. And I am not forgetting these other ones.

What is clear from this is, the only limitation at all added for 19, the only limitation at all added for Claim 4, and the only common limitation added between any of these or all of these claims, is the inlet guide vane limitation, and from that it is clear that the inlet guide vane limitation, adding the inlet guide vane limitation was the reason for this amendment.

Adding the use of inlet guide vanes in the system the way that they did was the reason for this amendment in order to get it allowed and get it out of the office as an issued patent.

Now I want to look at what Mr. Krupka put up to show why it was, I hate to use the word misleading, but I will.

Let's start with Claim 4. And he backed off on this one a little bit, as opposed to what they did in their brief. But -- and this is their exhibit, I don't know what slide that is. This is their Slide 10. There is a lot more red, as you can see, obviously, to make an impression on you, than what they really put to the Patent Office when they typed it out and did the red-lining back at the time when they filed the patent.

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The first thing they did again is try to add a limitation at the top about the structure of the inlet guide vanes in the preamble. That is clearly not a separate limitation.

The second thing they did, although he backed a little away in argument, is to add the language from the other dependent claim, this big red block on their Slide 10, as sort of suggesting that it was another limitation. But then he said, no, no, no, no, it's not really another limitation, and that makes sense because what that big red block came from was another claim that was also rejected as obvious, because there was a double dependence there. If you look at the front of the book we gave you, with the patents, it explains exactly what happened. And that is that there was Claim 51, which became Claim 4, was dependent on both original Claim 48 and 49, but those were both rejected as obvious. The examiner said, if you take those two claims and then you redraft the 51, which became 4, in the independent form with all that, then you have an allowable claim.

The Federal Circuit actually treats 48 and 49 together as one. They even call 49 an independent claim with 48.

The point of all that, as Mr. Krupka concedes now, is that all of this big red block had nothing to do

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with getting the claims allowed and was not a reason for the amendment at all. It was just more rejected subject matter, just like the rest of the black.

So there is only one claim limitation in 4, Claim 4, that was added, the IGV limitation, no matter how much red writing they put up on the screen.

Next I will turn to Claim 19, where Honeywell tries to add three additional limitations that aren't there, in addition to the inlet guide vane limitation. Once again, if you compare the red-line that Honeywell made up for trial to the red-line that they submitted to the Patent Office, when they were making the public record the reason for their amendment, you notice again some stark differences.

The first thing is that the subject, the inlet guide vane limitation is there, (g). And they show it as (g). They try to add a limitation again from the preamble of the structure of inlet guide vane. That is part of the inlet guide lane limitation. The Federal Circuit said that. It is not an additional limitation.

What do they do next? Next they go down to Element (b), and in Element (b) they tried to add a limitation there. They say, no, look, Element (b), the word changed, that red wording changed, and therefore, that was another limitation, says Honeywell, that they added in this amendment.

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Well, when you look at the prosecution history, it's absolutely not true. And if you look at the board that we have up here, which are JX-31 and JX-33, the prosecution history is the actual red-lining that Honeywell added, submitted to the Patent Office, you won't see that red-lining. In (b), (b) shows that when Honeywell merged their dependent claim into their independent claim, the amendments that we are all here to talk about, there is no change in that Element (b). And here is why. Here is where Honeywell gets their argument from or gets their red-lining from.

There was a Section 112 of the Patent Statute rejection to the independent claim. What the Patent Office said is they were using the word flow, the Patent Office said I am not sure exactly what you mean by the word flow in the independent claim. Honeywell called that language, too, quote, I will show it to you, to quote, clarify the wording in the independent claim that was rejected because it was obvious.

And then they took that independent claim and they merged it with the dependent claim. That is the amendment that is at issue here and that's what got the claims allowed.

So this red up there in Element (b) has nothing to do with the amendment that is even at issue here. You

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can see what Honeywell did. If I go real quickly to the prosecution history, I am going to show you the actual evidence in the case. I am not going to go through the whole rejection.

Here is what Honeywell says. In 33 and 35 the phrase a flow -- they underline flow, this is Honeywell amending the independent claim that was found obvious, not the merger of the dependent claim -- they say, we have changed it to this other language and that is what Honeywell put in the read ink, and they said, this modification seems to more clearly indicate -- that's all it was. It was a clarification for that 112 rejection, to indicate the flow parameters actually sensed, not actual flow rate.

So that red-lining had nothing to do with the amendment in this case and therefore couldn't possibly be a reason for the amendment of the claims, which is what the tangentiality inquiry is.

Let's go back to Claim 19, Honeywell's red line. The next thing they do is they sporadically turn red a couple of other words. Those other single words here and there that they try to make up limitations out of or call added limitations again are nowhere in the red-line that Honeywell actually gave the Patent Office at the time. And there is a reason for that. It's because those were not additional limitations that had anything to do with the

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merger of these two claims, the dependent and the independent.

You can actually see from the board that one of those words, which was just the examiner, those are the examiner's initials, changing a typo. That's one of the things right there. It's not a whole other limitation that they added in this merger of the claims.

This is misleading. That is not what happened. Those little red words there that they added on C, D, B, E E, F, cannot be the reason behind this amendment, the rationale behind this amendment, as they try to suggest.

The only limitation added once again was the inlet guide vane limitation.

Now let's look at Claim 8.

Claim 8, they didn't take any liberties with the red ink this time. But they took a few liberties with the facts. If you look at Claim 8, again, you have the inlet guide lane limitation added, as we talked about. It's once again the only common element or limitation added to all of these claims, and therefore clearly on that alone the reason behind this amendment.

Then you also have two additional changes that actually came from the merger of the dependent claim. So unlike the other red ink that Honeywell had that has no relation to the amendment, the non-underlined wording in

Element (d) and (e) actually did come from that dependent Claim 16 that was merged into independent Claim 17, actually. I switched that.

But the point is, here is why that was done.

Those are also not new limitations. And they are not limitations that Honeywell added in order to gain allowance. Now, remember what the tangentiality requirement is, the analysis is not did you add more than one limitation. If so, you are off the hook on Festo. The analysis is, let's look at what the reason for the amendment was. And can Honeywell prove that the reason for the amendment had nothing to do with the use of inlet guide vanes in the surge control system.

They can't show that here for the commonality reason. They certainly can't in 19 and 4, even on 8, these other things that were added, the other two things that were added in the amendment from the dependent claim and the independent claim were already things that were in the prior art and were already things that had been rejected by the examiner as being obvious. And they can't possibly be the reason for the amendment when they are already existing in the claims that were rejected as obvious, and specifically both of these what Honeywell calls extra limitations in Claim 8 were rejected as in the claim until one thing was added to that claim: inlet guide vane limitations.

In other claims in the prosecution history, these other features that Honeywell calls the extra limitations were in claims, they were rejected as obvious, and only allowed once in the inlet guide vane limitation was added. And from the prosecution history record and the actual documentation Honeywell gave to the Patent Office and not the show they created for trial, you can tell the reason for the amendment was the addition of the use of inlet guide vanes in order to get these claims allowed.

And that's exactly related, directly related to the equivalent they argued in this courtroom at trial, which is the inlet guide vane use by Sundstrand.

I didn't just make this up. Obviously, we are going off the record. But also, the Patent Office, when they submitted their brief, in opposition to Honeywell's request that the Supreme Court grant summary judgment in this very case, the Patent Office explained what was going on here, too. And what I want to look at now is what the Patent Office said briefly.

This is the amicus brief filed by the Patent Office to the Supreme Court in this very case.

What they did is walked through what happened here. According to Patent Office, the same guys who prosecuted these patents and saw the red-linings that I have got up on the board, the Patent Office said, the surrendered

material consists of the difference between the scope of the original patent applications, which included an independent claim with no inlet guide vane limitation, and the scope of the amended patent applications, which expressly incorporated that limitation as a necessary one by canceling the claims without that limitation and retaining the claims that included it.

Just as I described for the last ten minutes, in a nutshell, the Patent Office read the claims the exact same way. That inlet guide vane limitation was the reason for the amendment. It was a necessary reason for the amendment.

The Federal Circuit, in their treatment of the inlet guide vane limitation in its opinion in this very case, treated it the same. I will not walk all through that. They talk about the fact that what happened here is they effectively got the claims allowed by adding the inlet guide vane limitation.

For that reason alone, there is no multiple limitations argument for Honeywell to rely on to try to wedge itself within a case like Insituform, where there were multiple limitations and the Court said it is clear as day from the prosecution history and all the statements made that the reason for the amendment was this limitation up here and not the limitation that everybody is arguing about in equivalence. They try to shoehorn their case into that

parameter or into that kind of scope by pointing to multiple limitations that don't exist.

But there is another reason that their argument fails. The second reason is that even if you were to recognize their red ink as other limitations, which it can't do at all for 19 and 4, but let's say they keep arguing it on 8, that the limitations that were added but that had already been rejected in other claims as obvious, they don't explain anywhere, which is their burden, in the prosecution history, and you frankly can't tell and Honeywell says you can't tell from the prosecution history whether it was one of these other two things in Claim 8 that they point to versus the inlet guide vane limitation that was the reason or the rationale underlying the amendment, and you can't prove tangential relationship simply by pointing to several limitations added by the amendment.

You need to show in the prosecution history that it was, the reason for the amendment was not the subject matter or not what was at issue in the equivalence, but rather some other claim or some other limitation, some oth reason.

And they can't show that on this prosecution history.

And the law on this is clear that they actually must show where in the prosecution history. They can't say,

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well, there is no reason and we don't know, which is, again, going back to their trial brief, which is what they say, they say there is nothing there to indicate whether it was the inlet guide vane limitation or something else, that doesn't carry their burden. You don't carry your burden by throwing up your hands and saying we can't tell whether it was one versus the other and that that, because we didn't say anything to the Patent Office, Sundstrand can't show it in the prosecution history.

You can't reach the burden like that.

I want to talk about two cases on this issue that Honeywell relies on. The first was the Cordis case, which is from the District of Delaware, and it is not inconsistent with this case for a couple of different reasons. The first is that the Court did point to statements within the prosecution history, specific distinctions and explanations that the patentee made between the prior art and what its amendments were that it's actual reason underlying the amendment had nothing to do with the equivalence issue at trial and what the equivalent was -- not at trial, but what the argument was.

That alone distinguishes that case from this case. It's an explanation case.

There wasn't this void of anything by the patentee in the Patent Office to actually explain what they

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were doing.

The other thing, and I do this hesitantly in this building, to talk about the case on a timeline. Cordis is before Insituform and Cordis is before the Rhodia Chimie case. Remember, the Rhodia Chimie case is the one that says, you can't say because the equivalent wasn't in the prior art before the examiner it's tangential. You can't make that leap. Part of the rationale used in the Cordis case is that leap. Looking at the prior art, focusing on the prior art and saying, I don't see the equivalent here, and therefore, it must not be directly related, it must be tangential, that was without the guidance of Chimie. And I think, you know, the Cordis case is distinguishable for the whole other reason that they actually explain. But that is another important feature.

I think Mr. Krupka said that they relied on some other District Court cases, too. The only case that Cordis relies on at its heart is the Amgen case, which we have discussed and read, and I won't get into the differences between that case.

The other thing, the other case that was not around yet in the Cordis case is Insituform. Part of the Cordis rationale and Mr. Krupka's rationale was, he says, well, what Sundstrand proposes, under that, you would never get over the hurdle or the presumption because you are

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always going to be amending the claim in order to get the amendment that you then argue equivalence from at trial. Therefore, it's the exception that swallows the rule.

I know Insituform proves exactly why that is not the case. And I know Insituform is important to walk through because it shows exactly the circumstances that you see overcoming the tangential relationship or what is required to do so.

Interestingly, there have been a dozen cases, unless they decided something today, at the Federal Circuit that have addressed the Festo presumption and whether the party could overcome the Festo presumption. The only case out of those 12 that has found the plaintiff can overcome the presumption is Insituform. So it is important to show what it takes. It's a stark contrast to what we have here.

What you had in Insituform was specific explanation by the patentee over and over and over again of what the reason was behind its amendment and why it was completely unrelated to the limitation or the equivalence arguments that the plaintiff was making.

And, briefly, because I know Your Honor has read the case, it had to do with a resin liner for piping. And there were a couple of different issues. One issue related to these cups used to fill that resin liner and another issue related to when you fill it with resin, how far does

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the pump have to be from the resin source, because if you are way down here trying to pump resin, you need a big pump and that is a pain in the neck.

What the patentee said and made clear is they said, in this amendment, we are going to distinguish the prior art by, we are going to move this resin source real close so you just need a little pump, and they went over and over and over and over and over again that that was the reason for the amendment and that's the reason they were getting around the claims -- or getting around the prior art.

Then we get to trial, that is not an issue. The only issue is something about the number of cups used in this process. And they are totally unrelated to the reason for the amendment.

I want to walk through the claim briefly.

Here is the Insituform case. What I am going to do here is try to zoom in on the actual claim that is in the case. This is Claim 1 of Insituform. Now what I want to do is put next to it the claim in our case, the red-lining, Claim 4 again. I will zoom in on that, so you can kind of see them side by side and look at the differences. What the text doesn't tell -- here is the point. That is, what happened in Insituform is that the Court said, or the patentee said, here is why I am amending the claims. Here

is done, you have to infringe each limitation of the claim. But the equivalent analysis is done on a limitation-by-limitation basis.

So what was argued to be the equivalent was the equivalent of that IGV limitation.

And that is something you know not only from what is going on here, but I have a handout that I pulled together on the Festo case, in this case handed I will that up to the Court.

What this shows, Your Honor, is one of the claims in Festo, there were actually two patents in Festo. Mr. Lind talked about a couple of these limitations at issue before. What was accused of infringing was a rodless cylinder. That is the entire product. But when it came to the analysis of what the equivalent was, the Federal Circuit and the Supreme Court when they looked at that looked at what the limitations were where the change was made. And there were two limitations at issue.

One is the one where first sealing rings is highlighted. And originally, you had just sealing rings. Then it became first and second. You see the second down a couple limitations below the other limitation where equivalence was claimed was a cylindrical sleeve made of a magnetizable material.

But when the Court looked at what the equivalent

was, the equivalent to the first sealing rings wasn't the entire rodless cylinder or, as Honeywell put it, the accused apparatus and method. It was the single two-way sealing ring, a particular aspect of the product at issue.

When it came to the next limitation, a cylindrical sleeve made of magnetizable material, the alleged equivalent was the use of aluminum, a non-magnetizable material. Not the entire cylinder but the use of the aluminum in the sleeve. It is not the entire system.

Then the question is, okay, so we are not looking at the system. We are looking at IGVs. What was it that was argued to the jury to be the use of IGVs that was the equivalent? Honeywell now says, this is their kind of other way of looking at the equivalent, well, it was the use of IGVs to address the double solution problem, it was this very specific logic, this very specific control logic. And they point to this diagram right here, one of their slides, and they say, see, there is this control logic here and you have to have this exact logic to be unforeseeable. It is unforeseeable unless you have the exact logic.

Well, that's not how they argued it to the jury. To the jury, and that's what this board over here Honeywell -- HSC Exhibit 3 is for. To the jury Honeywell didn't argue that all of this control logic is what made it

equivalent. To the jury, Mr. Muller argued that it was the use of IGV position.

Actually, what I am going to do is -- I have a handout first of Mr. Muller's testimony. Then I am going turn to what was argued in the briefs based upon that. Again, I will hand the handout to Your Honor.

This is what we put together as a summary of Mr. Muller's testimony.

Remember, as I mentioned earlier, you have to have this linking evidence. It's not just was IGV position talked about at some point in the trial? That is not enough. You have to have the linking evidence that ties the alleged equivalent to the IGV limitation. This is what we found in the trial transcript, when we looked at what Mr. Muller's evidence was. I am not going to go through all of it. That is why I supplied the summary for this Court, just to give a couple examples.

On the first page, Claim 19(G0, Mr. Muller said, The purpose here is to measure a guide vane position in order to help as an input to the surge control system.

And there is not that much more detail in the rest of the discussion of Claim 19(g).

If you turn to the next page, Claim 8(f), there is a little more detail there on the function on 8(f). What Mr. Muller said is that, going down toward the end of that

when it is operating in high-flow and when it is operating in low-flow, that is what the IGV tells you.

Well, that is fine, in terms of how it's operating in low-flow and high-flow. But that doesn't go through that entire logic that we saw in the diagram and all the different aspects of it. That is more general. Is it high-flow or is it low-flow, that is the job of the IGV position in our system.

Now, after this trial, where the jury obviously found there was equivalence, we attacked the sufficiency of the verdict. When we attacked it, we said, hey, there wasn't enough linking evidence. And here is where Honeywell came back in their JMOL brief and then later in the appellate brief and said, no, there was enough evidence.

Here is what they said.

They said, the flow-related parameter used, DELPQP, which you will hear a lot about, was a function of the IGV position. They didn't say DELPQP caused a double solution issue which then leads us to have to use the bleed select control valve, et cetera.

They didn't get into that kind of detail, either with the jury, when they argued what the equivalent was or the JMOL brief. Based on that, the Court found there was sufficient evidence and said the flow-related parameter was a direct function of the inlet guide vane position. That is

delta P over P.

And the particular delta P over P that is used in the 3200 system is delta P over P based on this measurement of static pressure in the diffuser. That is something that was known.

The next slide shows that. Honeywell in its brief says that what we did was later-developed technology. That is obviously the test here. That is what Festo says is the test, are you looking at later-developed technology or old technology. That's what you look at. The Court factors in whether it was unforeseeable.

Mr. Clark, Honeywell's corporate representative, wrote in 1983 about a system they were looking at, a surge control system that used static pressures, located in the diffuser, to detect surge.

Here is what he said in his deposition.

Was there any difference in the technology in '83, the question was asked, compared to what could have been implemented two years before that?

Now we are looking at two years before, December '83 versus December '81.

Honeywell's corporate representative and binding testimony said, It doesn't require any -- well -- it doesn't -- it doesn't require any new technology.

1981 is before the relevant date here, October

of '82. So no new technology means it's old technology, which is obviously more likely to be foreseeable under the Festo ruling.

What does it lead to when you have measuring static pressure in the diffuser? And we know that from text as old as the fifties, what happens if you have supersonic flow in this kind of diffuser. What happens is, this is the text from Shapiro, which actually both sides' experts have relied on, and he explains, when there is subsonic flow, you get the pressure going up the diffuser. But when it's supersonic, because of a shock wave that is formed -- and the experts will go into this more -- actually, you get the reverse, and the pressure goes down. So you have this effect caused by supersonic flow.

This is something that isn't unique to the APS 3200. We know that by looking at Mr. Muller's declaration to this Court in 2000.

On the left, on this slide, we have the APS 3200 double solution curve. And the right is the testimony from Mr. Muller in his declaration submitted to this Court in the year 2000.

He said, the inverted-V/double solution as a result of this shock wave, that is what he has talked about, any compressor taking a static pressure measurement of supersonic air flow in the diffuser would have a similar

characteristic.

This isn't something limited to the APS 3200. You get this any time you measure supersonic flow in the diffuser. As we are going to see shortly, there was such an APU out in the market in the 1970s that measured static pressure in the diffuser and accounts for supersonic flow and that's the L1011 APU. I will talk about that in a couple minutes.

So this supersonic flow is when you place static pressure in the diffuser. It's what causes the double solution curve to exist. This is something not new. This isn't something that we only found out about in the 1990s, when we developed the 3200. This is something people had known for a long time.

I am going to play right now a clip from Mr. Clark's deposition, Page 117 and 118:

Question: When did you -- well, when did you first know the fluid dynamics principles behind the double solution problem? That's back in college. Right?

Answer: I knew shock waves and pressure drops back then.

Question: And those are through the fluid dynamic principles that you discussed that are responsible for the double solution problem. Correct?

Answer: That's correct.

Aside from having a great hair-do, Mr. Clark's testimony is important because it is binding on Honeywell. He is their corporate representative. He says, the double solution, knew about the principles behind that since college. He started at Honeywell in 1976.

There are many examples of double solution curves in the literature. You will see some of those examples in the next two days.

Now I want to talk about the L1011. The L1011 housing up here, let's see -- can you see that okay?

So here we have -- we don't have the impeller for it. That goes in here, like a donut, it goes where the hole is. This is the diffuser right here. Half of it. The other half is this part right here.

Your Honor, if I may approach a little so you can see it.

What is important is, this diffuser is where static pressure was measured. And you can see, there are these four holes here in one of the passages. You will hear testimony that these four holes are static pressure taps and that the L1011 relies upon the measurement of these static pressure taps in order to detect the change in pressure or delta P, delta P over P, that you have as the flow goes through the diffuser.

I am not going to put this down on the table.

THE COURT: That is a good thing, Mr. Levine.

MR. LEVINE: I learned my lesson.

So with the L1011 diffuser, there is a document you are going to see, Exhibit 105, which is called the master key document. It was a document on the L1011 APU provided to the airlines. You may remember, the L1011 is the big plane, like DC10 size. And Hamilton Sundstrand, which is one of the two predecessor companies of Hamilton Sundstrand made the L1011 and they started the manufacture -- the APU L1011, they started the manufacture of it in 1972. They first delivered to Eastern Airlines, another company of the past. The document explains that the load compressor discharge flow increases the differential pressure, differential pressure is the difference between pressure at one place and the diffuser in the other, and what it causes is it drives the surge valve toward closed.

In other words, the surge valve was opened and closed depending on what this delta P over P measurement told it. It sounds familiar.

We have more. Which is, on the left-hand side of the slide, for the 3200, which shows the delta solution curve. On the right-hand side, we have Figure 9 from that Exhibit 104, and this shows a curve from the L1011, pretty close. Double solution curves weren't new. Mr. Clark knew about the principles behind them since college. And we

experienced them on the L1011.

In fact, they are described, and I drew it -- I had the graphic artist draw it in blue so it would be a little easier to see.

It is interesting, because the 3200 and the L1011 documents describe this in similar ways. So the 3200 that Honeywell quotes from one of our documents in its brief, the DELPQP, as that changes, it -- you have an inflection point about peaks and then decreases. In other words, the bell shaped curve -- it goes up, peaks and decreases.

How do the documents in 1975 describe this phenomenon? They say, the tendency of the signal curve and the delta P curve, the peak and then dropoff, thus potentially giving an ambiguous signal. Ambiguous, you don't know which side you are on, the double solution problem.

Now, the there was another APU -- let me address one other point. You have heard a lot from Mr. Krupka about the testimony of Mr. Shinskey and the statements by HSC in its briefs back in 2001, and said, hey, those are binding. It is interesting that Mr. Krupka called Shinskey Mr. Control. I found that curious, because in the briefs that were submitted to this Court five years ago, what Honeywell said about Mr. Shinskey is that he made a series of outright

misstatements, he was forced to recant and the defense lacked all credibility.

When we are talking about people taking different positions a few years ago, we have to look at v Honeywell was doing.

But again, when you look at judicial estoppel, which Mr. Krupka mentioned, he talked about it very generally. But he forgot to mention one of the key factors in judicial estoppel. And we cited in our brief the Tracinda case out of this district, where it lists the factors. And one of the key factors, No. 2, is whether the party has succeeded in persuading the Court. That is obviously pretty important because the arguments that were made by Sundstrand and the testimony by Shinskey was to persuade the jury that there was no equivalent.

The jury didn't buy that. The jury found there was an equivalent. That is why what Honeywell said in its statements in its briefs are what are most important here because they won before the jury.

Now, Honeywell, Mr. Krupka also referred to a number of statements by Mr. -- or in the Sundstrand briefs, talking about the curve as being odd and unusual and funny. It may be all those things. That of course isn't the test of foreseeability. Foreseeability is looking at whether it was something that was known before. Not -- you can hav

funny looking things that are known before, or odd looking things that people knew before. And the evidence here is going to show that this funny looking brief -- this funny looking curve was known before, and, in fact, as we saw a couple minutes ago, Mr. Muller said to this Court, any compressor that measures static pressure with supersonic flow gets that characteristic.

I want to end by talking about a couple of things. One is the Honeywell 331-350. Honeywell in the late 1980s, this is after the relevant date here, but still important for a reason I will get to, in the late 1980s, they developed their own APU, called the 331-350. And lo and behold, they measured static pressure of the diffuser, what do they get? Double solution curve. And they admit that, their 30(b)(6) witness admits they experienced double solution. He says that the same inverted-V or double solution problem is the 3200.

So they get the same problem. What do they do to address it?

They use IGV position:

Question: The 331-350 APU used inlet guide vane position as an input in determining when you are on th right-hand side of the double solution curve. Correct?

Answer: That's correct.

So they use IGV position. Then comes one of the

most important questions and answer series in this case. Mr. Lind asked Mr. Clark, the corporate representative: If you had encountered the same problem in the seventies, what would you have done? Here is what he says:

Question: One of the reasons that you used IGV --

I played the wrong one:

Question: In the late 1970s, had the double solution problem come up, it could have been solved at Honeywell?

Answer: If it had come up -- if it had come up, it could have been solved.

Question: And it could have been solved by using inlet guide vane position, correct, in the late 1970s?

Answer: The same way we did it on the 350. Would have done it the same way in the seventies.

What does that tell you? It tells you -- Honeywell says, well, that's speculation. Well, this is after hours of asking questions about the different principles, the principles that were in Shapiro. The principles behind the double solution curve that Mr. Clark said he learned in college. To ask the witness who has been working on this issue since 1976 how he would have done it in the seventies isn't speculation. That's something he is

clearly knowledgeable about and he can testify about.

But beyond that, what is the test in Festo?

Again, it says you should look at whether it's later developed technology or old technology. And Mr. Clark saying we would have done it the same way in the seventies is probative, it's important, because it tells you, it's old technology. If it was later developed, if it is something that wasn't around, it couldn't have done it then.

Maybe for that reason, we are not going to see Mr. Clark live. We are only going to see him on the video.

One last point, then I will sit down. That is, you heard a lot about the APS 3200, that took four years, that took a while to develop. And I have a timeline I am going to put up. I will take this one down, actually. This is a timeline of the development of the 3200. We have highlighted certain key memos. These memos are all memos that will be in the record. Most are joint exhibits.

In October 1991 -- by the way, there is testimony from Mr. Gruebel that Mr. Krupka put up about he didn't know about the double solution in 1990 when he started. There wasn't even testing done at that point. So they didn't know that there was double solution because they didn't know what kind of velocity that encountered. So at that point, there hadn't been testing done to see this.

It is important to remember, Turbomeca was our

partner. We split responsibility with them. They handled the load compressor and some other parts of the APU. We handled different aspects. We split it up 50-50. We were partners. Turbomeca was working on the load improvement. So it wasn't until a little bit later when they even gave us the data. They gave us the information. That was their responsibility. They have gave us the data. Mr. Shinskey said, what about this double solution issue when he saw the graphs.

Then Turbomeca said, very next month, they said we can solve it. We will use IGV setting. For the next few years they had in place something called the B factor test to look at which side of the curve you were on based in part on the IGV position.

Later they changed to a different test that was based in part on the IGV position called the pressure ratio test. And that is in the final control logic you will see.

There are two key points from this timeline. One is we weren't floundering around for four years saying what do we had about double solution, we can't figure out what to do. Within two months, the very next month after we raised the issue, IGV's setting was identified as the way to solve the problem.

The second point is that, while there were two different tests used, each of them incorporated IGV

position. Why? Because use of IGV position wasn't unusual. It wasn't something that was unexpected, when you are trying to figure out if your flow is high, if your flow is low. That is not something that was old technology.

In fact, that's something that people knew because you know from these compressor maps that the IGV position tells you, with these lines, they go high or low. I am going to end by playing something from Mr. Clark that addresses just this issue:

Question: One of the reasons that you used IGV position to solve the double solution problem is that IGV position influences where you are on the compressor map. Right?

Answer: It changes the compressor map.

Question: So yes?

Answer: Yes, it changes the compressor map.

Thank you very much, Your Honor.

THE COURT: Thank you. Counsel, rather than 12:30, this seems like a natural point at which to break, we will take our first witness in an hour.

(Luncheon recess taken.)

MR. PUTNAM: Good afternoon, Your Honor.

THE COURT: Mr. Putnam, your first witness.

MR. PUTNAM: Honeywell calls as its first witness Mr. Gerard Muller.

(... GERARD, MULLER, having been duly sworn as a witness, was examined and testified as follows ...)

DIRECT EXAMINATION

BY MR. PUTNAM:

Q. Good afternoon, Mr. Muller.

A. Good afternoon, Mr. Putnam.

Q. Can you remind the Court of who you are?

A. I am Gerard Muller.

Q. And what is your education and experience?

A. I have a Bachelor of Science degree from Applied Technical Institute of New York. I have a Master's degree from the University of Connecticut.

Q. Do you have any engineering in your training or background?

A. Yes. I am a -- I have a Bachelor of Science in mechanical engineering.

Q. So the type of engineer you are is a mechanical engineer?

A. That is correct.

Q. And have you -- what have you done briefly in your career?

A. Well, my first -- my first employment was with Pratt-Whitney Aircraft, where I was there for five years. I was involved in the design of gas turbine engines of all types.

Afterwards, I joined Exxon Research & Engineering, where I was part of the technology department, which provided support in the area -- support to all of the affiliates worldwide, which encompassed chemical plants, production plants, research, involving rotating machinery, specifically compressors and their associated drivers, like gas turbines, steam turbines, motors and things of that nature.

Q. And how is it that you have knowledge of compressors from your background?

A. Well, one of the areas -- there are several bases for that. As I indicated, I was in the technology department responsible primarily for large rotating machinery, and as part of that group there were a range of experts there who were foremost in their field, had been there before me, who acted to provide training for individuals there.

Specifically as far as more detailed information, I gained a great deal of experience as part of an activity that Exxon was faced with shortly after -- shortly after I arrived there, dealing with a problem where --

Q. Mr. Muller --

MR. PUTNAM: If I can, Your Honor, I want to keep us on the narrow. I think the Court has heard the longer version of your background. I was trying with the

Court's indulgence to give a shorter version of your background.

BY MR. PUTNAM:

Q. So you have experience with compressors in your background. Is that correct?

A. Yes, I do.

Q. Have you encountered the problem of surge control in compressors before?

A. Yes, I have.

Q. At what jobs have you encountered the problem of surge control?

A. At the job started at Exxon Research & Engineering, in the applications there and with my work I have done subsequent to that time, when I have had my own company working in the same field.

Q. And you are currently self-employed as an engineering expert. Is that right?

A. That is correct.

Q. And --

MR. PUTNAM: Your Honor, I may I approach?

THE COURT: Yes.

MR. PUTNAM: I don't know if the Court wants copies of exhibits.

BY MR. PUTNAM:

Q. Mr. Muller, let me hand you PTX-1162, and ask if you

recognize that as a copy of your resume?

A. Yes, I do. It is.

Q. And does that contain more detail of your background and experience in this area?

A. Yes, it does.

Q. And is it correct that you were the technical expert testifying at the February 2001 trial, the original trial in this case?

A. Yes, I was.

Q. And is it correct that you also served as an expert witness or have since then served as an expert witness on mechanical engineering issues in other litigations?

A. That's correct.

Q. Now, were you engaged as an expert witness to study issues relating to the remand from the Federal Circuit in this case?

A. Yes, I was.

Q. And have you considered whether the surge control system of the APS 3200 and its particular use of inlet guide vane position would have been foreseeable to one of ordinary skill in the art in 1982 and 1983?

A. Yes, I have considered that.

Q. And have you formed an opinion on that subject?

A. Yes, I have.

Q. What work did you undertake to form an opinion on that

subject?
A. In addition to review of the information that has been presented in this case, I did my own independent studies, looking into using -- looking into what information was available worldwide, discussing this very area, looking and trying to identify papers and looking at the conferences, dealing in this issue, that discussed any aspect of this.
Q. Have you also reviewed the references cited by Sundstrand in the course of the litigation?
A. Yes, I have.
Q. I believe you said you also reviewed the existing record in this case from the 2001 trial?
A. All of it.
Q. Have you provided reports summarizing your opinions?
A. Yes, I have.
Q. How many different reports?
A. Three.
Q. Were you also deposed by Sundstrand on the subject matter of your reports in this remand proceeding?
A. Yes, I was.
Q. Before I ask you about opinions that you reached, let's talk about the technology and the accused -- the equivalent, found equivalent with the product at issue here.
Let me ask you, did you prepare or assist in preparing some demonstrative exhibits to illustrate your

testimony?
A. Yes, I did.
MR. PUTNAM: With the Court's permission, these are designed so that they can be slipped into the folders, or the binders.
BY MR. PUTNAM:
Q. Are you familiar with the operation of the APS 3200 surge control system from your work in this matter?
A. Yes, I am.
Q. Let's put on Demonstrative No. 1.
Is this a demonstrative that depicts aspects of the Sundstrand APS 3200?
A. Yes, it is.
Q. Is this a demonstrative that was shown to you that you used as part of your testimony to the jury back in February 2001?
A. I believe so.
Q. Okay. Can you tell the Court what are the different pieces, or different components in the APS 3200?
A. As indicated here, starting with the inlet guide vanes, what you see are basically small vanes, narrow strips of metal, which are connected, are interconnected peripherally around the inlet of the load compressor indicated by that blue area.
Q. Where is the load compressor indicated on this

demonstrative?
A. The load compressor is identified in the left side of the graph as a load compressor. It constitutes the flow of gasses, which is what is shown here, from that round area adjoining the load compressor following that U-shaped curve to the inlet guide vane.
That is essentially the flow path of the air as it enters and is compressed and comes out the round air, which is the -- referred to as a scroll.
Q. So the air enters at the inlet guide vanes. Is that right?
A. Yes.
Q. And then flows out from, I think you said the round area?
A. Yes. It comes in on the outside, it flows radially inward initially, then it curves around and comes back up again. And actually at the bottom of the curve -- I think we see this a bit later in some of the others -- it goes into an impeller, which is what actually compresses the air, then it comes out the top, where it is collected in what is termed a scroll.
Q. Okay. And after the air leaves the load compressor in the APS 3200, where does it go?
A. It goes one of two places. It goes --
Q. First of all, on the chart, where is the air going?

A. Well, it is showing right now, if you follow the blue line, it moves out through a duct, moving vertically upward. And then it comes to an area where there is a bleed control valve, which is essentially what is called a butterfly valve, simple valve, that directs the air in this particular case showing it directed towards the aircraft.
Q. Okay. What is the purpose of the bleed control valve or the surge valve in the APS 3200?
A. The bleed control valve exists in the system when the flow, for reasons having to do with the user of the flow in the aircraft, where for some reason it does not -- it has a greatly diminished demand for that air, the flow reduces. And then the problem that occurs for the compressor itself is that it has a minimum flow by where it can safely provide pressurized air.
If it falls below that point, it is no longer able to generate the necessary pressurized air and it will momentarily stop doing so.
As it does so, the air that is in that vertical line and in that line going to the left that's going to the aircraft, all that air there that is higher pressure in this instance run back into the load compressor. And then, when that happens, it results in the operation of the compressor being reestablished so it repressurizes the air, still staying at very low flow. And it then pressurizes that

line. Again, the same thing happens.

The aircraft is not able to use it. So you get a repetition of the cycling back and forth. It is this repetition of cycling back and forth which is what is referred to as surge.

Q. Did you prepare an animation as part of your testimony to the jury in 2001 that illustrated this idea of air flowing from the compressor and surge?

A. Yes, I did.

Q. I don't want to show the whole thing, but let me just show a couple of frames, if I can.

First of all, let's stop here. When it says high air demand, what does that indicate?

A. Well, that indicates that it is providing air that both pressurizes the cabin itself and also provides -- and also provides the air for use in the air conditioning system that is on the aircraft.

Q. Keep the frame frozen there.

In the higher air demand slide or frame from your 2001 animation, where is the air leaving the load compressor shown as going?

A. As I indicated in the earlier slide, the air again, it's shown in that blue path. It goes from what I termed the scroll area adjoining the type of load compressor, moving vertically upward, into the area where the bleed

control valve is. And that valve is positioned so as to allow the air from the compressor to go into the cabin itself.

Q. On this picture, is any air being shown as being vented off to exhaust as well?

A. There is indication, a small indication of some pressurized air going to the exhaust.

Q. Let's run the animation.

(Pause.)

If we go to the next frame of the animation.

Let's stop it here. I see at the top, the title, it says Low Air Demand. Do you see that?

A. Yes.

Q. What does that indicate?

A. The low air demand refers to the condition I described earlier, when the user for the pressurized air in the cabin, primarily, the air conditioning system for whatever reason no longer needs the same quantity of air, so it's reduced to a low level. That low level is at a point where it can cause this instability that I mentioned earlier because the compressor can't operate at such a low flow.

That is monitored by what is termed the surge control system, which then activates the bleed control valve and, whereas formerly the valve was positioned so that the air would go to the cabin, now, the valve repositions itself

by the action of the surge control system to rotate that bleed control valve so as to allow the air to go unimpeded from that blue area where it was collected around the -- not collected, but where it was passing through the bleed control valve and now is directed back towards the exh. shown in those orange arrows. And it is combined with the gas turbine exhaust, and is expelled outward of the aircraft.

Q. So the larger here, orange arrows, are air being bled off via the bleed control valve to the exhaust. Is that right?

A. That is correct.

Q. Let's run the rest of this just for a couple seconds, run this animation.

What happens if you don't have proper surge control and you have a surge situation?

A. I think you have to move on.

Q. Stop it right there.

A. That is the surge condition that I described earlier, where you could see what they are really showing through this animation is that the flow is in a cyclic manner, a very rapid cyclic manner, is trying to get out of the compressor and go into the cabin, is unable to because there is a higher pressure there than it has.

So it runs back into the compressor. It then

gets repressurized and it keeps cycling back and forth in that process, shown by these arrows going back and forth.

Q. Back it up, if you can, a couple seconds.

That is the surge condition that the technology here is designed to prevent?

A. That's right. And the surge is occurring as pulses. It is not quite the way it is shown there. It is like a continuous sort of flow.

It is pulsing back and forth. This is where the term surging comes from.

Q. Turn off the animation. We will go back to slide 1.

Now, what you have outlined in orange in this slide from the 2001 trial is the load compressor. Is that right?

A. That would constitute all the elements of the load compressor.

Q. If we can go to Slide 2, please.

Is this another slide that was used at the 2001 trial with the jury?

A. Yes, it is.

Q. What does this depict?

A. Well, this shows, this is basically a cross-section in scale, in proportion of the actual parts that are used, which were shown earlier as a cartoon.

It shows the various parts, then, obviously,

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identifies what those parts are.
Q. For the 3200 load compressor. Correct?
A. That's correct.
Q. Now, does this demonstrative, from the 2001 trial show where the 3200 surge control system measures pressure?
A. Yes, it does.
Q. And where is that?
A. Well, if you -- first of all, it identifies the sensing device, which is very close to where you have whatever that little marker is. I assume -- you highlight that. That refers to as P substatic pressure measurement -- I can't --
Q. I think it says integrated into scroll housing?
A. It's basically indicating that there is a sensing measurement device which is located in the wall of the scroll, which has -- wherein it is sensing through a hole that is in the side of the housing the static pressure right at that position which is located. I will describe that in a moment. It is located within what is termed the actual diffuser, diffuser blade.
That is that portion right above that.
Q. When you say diffuser, where is that?
A. The diffuser, it's the portion that is identified in the block just above what you had right there. That is a diffuser there. And it points to, what you see as a little

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rectangular section, which is right in the area above the rotating impeller, which is where the energy is imparted to the air and does the initial pressurization. And then the expansion of the air is what generates the high pressure, occurs through what is termed this diffuser.
Q. So am I right that one of the pressure measurements for the APS 3200 surge control system is in the diffuser?
A. That is what this drawing indicates.
Q. Where is the other one?
A. The other one is located in the discharge of the load compressor itself.
Q. That doesn't happen to be shown on this diagram?
A. It is not shown, because this is a cross-section.
Q. Now, does the APS 3200 -- we are done with that slide for now.
Does the APS 3200 make use of a flow-related parameter in its surge control system?
A. Yes, it does.
Q. What is that flow-related parameter?
A. It is termed by the act acronym DELPQP.
Q. Do you have a demonstrative to explain to the Court what that parameter is?
A. Yes, I do.
Q. Put up No. 3, please.
Explain to the Court how the APS 3200 surge

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control system measures DELPQP?
A. Recall for a moment, as I just indicated, it takes one static pressure measurement within the diffuser as indicated in that earlier slide, which is located in the earlier portion of the diffuser.
It then compares it to the -- a static pressure measurement made in the discharge of the compressor.
It takes those two values, finds the difference between them, and then defines it by the static pressure measured in the discharge of the compressor.
Q. Now, the third bullet you have on this chart is a unique measure of flow. What do you mean by that?
A. What is unique about it is that the actual measurement in the diffuser, and comparing it to the discharge of the compressor and in turn dividing that by the discharge measured, or the pressure measured in the discharge compressor, that value itself is something that is something I had never seen before. This is going back to the first trial. And it is something that, from what I can see, is still a unique measurement, referring back to that time.
Q. In what sense -- what attributes of it make it unique?
A. What makes it unique is basically its response.
Q. What do you mean its response?
A. Well, the purpose of this parameter is to measure the pressure in the diffuser compared to the pressure and

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discharge and divide it by that discharge pressure. And whatever that calculation is, it then, that is referred to as a parameter which in turn is compared to the flow going through the diffuser itself.
That is what the function of this parameter is, is to relate the calculation that I have just described to a particular flow that is going through the diffuser itself.
Q. And does the APS 3200 surge control system make use of DELPQP?
A. Yes, it does.
Q. Were there any design issues presented to Sundstrand by DELPQP in its response?
A. Yes, there was a serious design issue that was presented by this method of measuring pressure or forming the value of DELPQP.
Q. And what was that?
A. Well, the purpose -- the purpose of this measurement was for it to be used within the surge controller. And it really is in essence a simple enough measurement. What you are trying to do is by making this pressure measurement, the idea was that there would be a unique value of DELPQP associated with every increment of increasing flow, such that as the flow increased, you would get a proportional curve, generally an increasing, a curve that would move up from the lower right-hand corner to the upper right-hand

corner in some fashion, in a continuous fashion, giving a progressive natural response.

As, for instance, something on the order of, as the flow would increase by a certain amount, there will be a progressive natural increase in the value of DELPQP. And that was the expectation at the time when this sort of measurement was made, because it is a common expectation for a control purpose.

You are looking for something that is proportional and predictable.

Q. And what was found with the APS 3200 DELPQP?

A. Well, when they made this measurement, by placing this, taking this measurement from the diffuser and from the discharge and forming this value DELPQP, and when they ran this test, started increasing the flow, rather than it increasing in a nice proportional way and just moving up as would be conventionally expected, they unexpectedly found that they had a result which was unusable for this purpose.

Q. What do you mean unusable for this purpose?

A. Rather than going up in a nice proportional continuous fashion from the lower right-hand corner up to the upper right-hand corner, as these things are expected to do, in fact, when they were about a half of the flow, which is what they were going to be using this for, rather than it at that point being at some value that was still usable, it had

actually risen to some maximum value, and somewhere about halfway through that point, instead of continuing, as the flow increased, it began to come down again. And it came down to the point that when it reached its maximum flow, it was back to almost where it started, forming what is just used for purposes of reference an inverted-V curve.

Q. What did the APS 3200 surge control logic do in response?

A. Well, the way the surge logic works is that the whole purpose of this measurement is for the generation of the DELPQP signal. That DELPQP signal is basically an electrical signal that goes out to the controller. Now, if it had been working as it had been, as they had expected, going up in a continuous fashion, there would have been some electrical value, increasing electrical value associated with a specific flow.

So if you measured that particular value in the controller, let's say it went from, for example, from one to two, you could say, fine, we have now increased our flow from A to B.

If you then went to half its flow, you would have expected a certain value.

But then, when you went beyond half that value, half that area where that peak occurred, and continued to, let's say, eight-tenths of that value, well, that value

would have come back down again. Such that, as far as the controller was concerned, it would be confused. It would get two values. Because when it was at eight-tenths let's say, as an example, at eight-tenths of the maximum flow, would have the same electrical value generated proportiona to what DELPQPs that would be the same as, let's say, about two-tenths of flow.

So it would be confused. It would have made a measurement and gotten two values for it.

Q. And what does the APS 3200 surge control system do to respond to this confused or unpredictable response?

A. When they were faced with this unexpected response, what they had to do was to find a way of discriminating between the low region and the high region, or the high flow region and the low flow region of the response.

To do that, they reverted to the use of the IGV position, because the IGV is -- or the opening of the IGV is an indication of how much flow is going through the compressor.

Q. If we can turn to Slide 8, please.

Now, you saw this in Mr. Krupka's opening as well.

This is a diagram from the APS 3200 surge control system. Is that right?

A. That's correct.

Q. And did you spend a good amount of time with this diagram in front of the jury, walking the jury through the APS 3200 surge control system?

A. Yes, I did.

Q. At the 2001 trial?

A. That's correct.

Q. All right. Now, I don't want to go through the details of how it works, because we already had a trial on that. Just to remember, up top, what is the input into the high-flow/low-flow test?

A. Basically, at the top, as you see what this logic shows is it gets the signal, DELPQP, and it uses that signal as one of the ways of determining what the position of the surge valve should be.

Q. Then what is the other input, or what is one other input, according to this Sundstrand flow diagram that was part of your testimony to the jury?

A. Well, as I just earlier indicated, since the DELPQP measurement alone was not sufficient to tell you what the flow of the compressor was, in order to be able to decide if you should open or close the surge valve, it now needed thi additional information, which is shown in the bottom, as IGVPOS, which stands for the position of the IGV.

Q. And is that where the 3200 surge control system incorporates the position of the IGV?

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A. Yes. It is at this point that it uses the position of the IGV in order to discriminate what the value of DELPQP is really telling it.

Q. With that background on the APS 3200 surge control system and how it works from the 2001 trial, let me ask you about the opinions that you have that you had formed. What was your conclusion with regard to whether the APS 3200 surge control system would have been foreseeable to one of ordinary skill in the art in 1982 or 1983?

A. In my judgment, there was not a foreseeable thing.

Q. What was your conclusion with regard to whether the particular use of inlet guide vane position made by the APS 3200 surge control system would have been foreseeable to one of ordinary skill in the art in 1982 and 1983?

A. It would not have been foreseeable in this application.

Q. Can you please explain to the Court the basis for your opinion that the APS 3200 position control system and its particular use of inlet guide vane position would not have been foreseeable?

A. Well, it wouldn't have been foreseeable for two basic reasons in my mind. First, there was no real need for it. There was a whole body of flow measurement devices that were already available and well-proven that would have given this nice, continuous, proportional value, which is what is used

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in most of industry for the measurement of flow as a result of some parameter.

So there were already many devices available. So someone, to my thinking, someone who was looking for some flow measuring device, which is a pretty straightforward thing, would have no reason to turn to -- to consider a device like this, because you already could buy off-the-shelf flow measuring devices.

The second reason was that if you wanted to use flow measuring devices for surge control, there are a number of companies making surge control systems used for several-gallon compressors. And those companies -- what is used throughout the industry is to measure -- to actually measure the flow conditions associated for flow for use in surge controllers on centrifugal compressors. The pressure measurements that are made and well-established are made at the inlet and discharge of the compressor.

It is the use of comparing those two pressures, which is then used in determining what the flow going through the compressor is, which activates the surge control.

So if I were someone in that period, I am looking ahead saying, well, you know, how am I going to measure flow, I have two sources. First, I have the flow measuring devices I can buy off the shelf. Secondly, I can

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resort to companies themselves to provide me with a surge control system where they have well-established means using pressure measurements on the inside -- on the inlet and the discharge of the compressor, those two pressures, and using that in order to activate a surge control system. So I would have had no incentive to look at something of this nature or to consider it.

Q. Are there, in your view, any examples in the art existing through 1983 of a surge control system that uses inlet guide vane position to compensate or correct for a flow measurement parameter that is uncertain or could have two values?

A. In my search, I haven't found any, nor has anyone presented any, that I am aware of.

Q. Now, you have testified earlier that the DELPQP variable was unique. Is that your opinion?

A. That is my opinion, yes.

Q. Is that related somehow to your opinion that the APS 3200 surge control system and its use of inlet guide vane position would not have been foreseeable?

A. Yes, it is.

Q. In what way?

A. Well, it's because of the nature of the measurement, that the particular measurement of DELPQP, in the 3200, uses a unique way of measuring pressure. It uses a pressure

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measurement within the diffuser and compares it to a pressure measurement in the discharge of the compressor, and then divides it by the discharge pressure.

That is something that I have never seen before. And to me, that was part of the reason why it wouldn't be considered. One, there would be no reason to really consider it. And it is not something, for a number of reasons, you would want to consider.

Q. Now, were you here in Judge Sleet's courtroom when Mr. Shinskey, Sundstrand's former expert, testified to the jury back in 2001?

A. Yes, I was.

Q. Was there any part of his testimony that you believe is relevant to this issue?

A. Yes.

Q. Slide 9, please.

What from Mr. Shinskey's testimony to the jury back in 2001 do you believe is relevant to this issue?

A. Well, it is his very statement here.

Q. That he had never seen the surge variable in the 3200 used to control surge before in any work that I had ever done or any publications that I have ever read?

A. Yes. This was in his trial testimony. It was in his reports as well. He was very adamant about it, as I recall. That was a clear position which he took at the time.

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Q. And for the record, that is the trial transcript at 1335.

Now, there has been some suggestion, Mr. Muller, that your position at the trial was somehow different than this. Was your position on DELPQP any different at the trial in 2001 than what you are articulating today?

A. No.

Q. Let's go to the next slide, slide No. 10.

Am I right that this is a portion of your testimony from the trial of 2001 at Pages 753 to 754?

A. That's correct.

Q. When you said during your trial testimony in 2001 it measures flow in a special way, which is special to the 3200, what did you mean by that testimony?

A. When I referred to it as measuring it a special way, which is special to the 3200, I was referring to the fact that it was taking a measurement in the diffuser, comparing it to the discharge pressure, what we are terming DELPQP, it was the method of that measurement, producing what I indicate above this peak key double solution curve, which is specific to the 3200.

Q. And this was from the testimony that you gave to the jury in 2001?

A. That's correct.

Q. In fact, can we switch to one of the slides Mr. Krupka

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used in opening, which was the Sundstrand Federal Circuit brief.

You see here, Sundstrand, in their Federal Circuit brief, said Honeywell's own expert admitted that the high flow logic addresses this unusual behavior of DELPQP in a way that is special to the APS 3200.

Was that expert you?

A. That would be me, yes.

Q. And is it your understanding that they were quoting here in their brief some of the same testimony that if we flip back to the 3200 funny looking curve actually coming from this very portion of your trial testimony?

A. It certainly appears so.

Q. I want to be clear. Is it just the fact of having a double solution or inverted-V that you are saying is unique to DELPQP?

A. No.

Q. What is it?

A. What is unique to DELPQP is not simply that it is a double solution curve. What is unique to it is the nature of the response itself.

Q. You say the nature of the response itself, what do you mean?

A. Well, the response itself, as used in this surge controller.

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Q. Which is what?

A. Well, the response itself being that as a function of flow, it gives two solutions, and as a result of taking measurements in the diffuser and comparing it to the discharge of the compressor.

Q. All right. Now, is there any connection given the unique DELPQP response in the AP 3200 and its use of inlet guide vane position?

A. Yes.

Q. What is that connection?

A. Well, the connection is that in order to get around this, the problem of having an unusable flow measuring parameter, they had to resort to the use of the IGV in order to allow them to use this DELPQP parameter. Otherwise, it would have been unusable.

Q. Again, did Mr. Shinskey in the testimony that he gave to the jury while you were sitting here address this issue?

A. Yes, he did.

Q. Can we have the next slide, please?

And this is from the trial transcript at 1383, saying the high flow/low flow test's only purpose is to protect against this possibility and it's caused based on the unique characteristic of DELPQP measurement as a function of flow.

Do you agree with Mr. Shinskey that the purp

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of the high-flow/low-flow test is caused by the unique characteristic of DELPQP?

A. Yes.

Q. Now, there was also reference in Mr. Levine's opening to this, some deposition testimony you have given in this case. You are not saying, are you, that the use of, any use of IGV position in a surge control system was new in the APS 3200 or in 1982 or '83, are you?

A. No, I am not saying it was new at all.

Q. What is it about the APS 3200's use of IGV position that you are saying was new or unforeseeable?

A. What was new and unforeseeable in the use of the IGV position was its use for this specific purpose, to address the fact that the generation of DELPQP through the measurement of pressure in the diffuser and the discharge produced a response that was unusable unless the IGV was used in order to resolve -- in order to make it a usable value. And this is a use of IGVs they have never done before.

Q. Are you aware of any surge control system anywhe of 1982 or 1983, that made use of IGV position in that w

A. In the way I just described, no.

Q. We are done with that slide.

Let me turn to the topic of L1011, which is one of the items that Sundstrand's counsel talked about, I think